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(54) Title: **MULTI-CHAMBER CONTAINER**

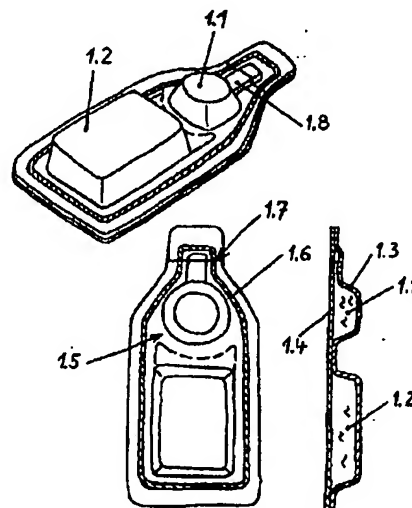
(54) Bezeichnung: **MEHRKAMMERBEHALTER**

(57) Abstract

The invention relates to a multi-chamber container comprising cups (1.1, 1.2) which are covered by a common covering film (1.4). The cups are separated from one another by a connecting element (1.5) on which the covering film is sealed in such a way that, when applying pressure on one of the cups, this cup is interconnected to one or more adjacent cups by removing the covering film from said connecting element. The sealing strength on the common edge, over which the covering film and cups are interconnected, is selected such that it is high enough to prevent the connection between the covering film and the cups from detaching in the edge area due to this pressure. This solution establishes many examples for application especially with respect to the type and composition of the media accommodated in one of the cups. This can concern the use of liquid media. Applicators of different types, especially of types which expand when moistened, can be accommodated in the cups so that the multi-chamber container can also, for example, be directly used for the transdermal application of liquid active substances.

(57) Zusammenfassung

Ein Mehrkammerbehälter weist (1.1, 1.2) Näpfe auf, die von einer gemeinsamen Deckfolie (1.4) überdeckt sind. Die Näpfe sind mittels eines Stegs (1.5) voneinander getrennt, auf dem die Deckfolie derart aufgesiegelt ist, dass bei Anwendung von Druck auf einen der Näpfe die Verbindung zwischen diesem Napf und einem oder mehreren angrenzenden Näpfen durch Ablösen der Deckfolie von diesem Steg hergestellt wird. Die Siegfestigkeit auf dem gemeinsamen Rand, über den Deckfolie und Näpfe miteinander verbunden sind, ist so weit höher gewählt, dass die Verbindung zwischen Deckfolie und Näpfen in dem Randbereich durch diesen Druck nicht gelöst wird. Diese Lösung eröffnet viele Anwendungsbeispiele insbesondere hinsichtlich der Art und Gestaltung der in den Näpfen untergebrachten Medien, es kann sich hierbei um flüssige Medien handeln, es können jedoch auch Applikatoren verschiedenster Art, insbesondere auch solcher, die sich unter Benetzung ausdehnen, in einem der Näpfe untergebracht werden, so dass der Mehrkammerbehälter beispielsweise auch unmittelbar zur transdermalen Applikation von flüssigen Wirkstoffen eingesetzt werden kann.



Description

PACKAGE WITH PLURAL COMPARTMENTS

Field of the Invention

Particularly in pharmaceuticals and cosmetics - but also beyond these fields -
5 there are applications in which two or more substances, as a rule product
components, are supposed to be put together and mixed, or an absorbent
vehicle material is supposed to be mixed with impregnating medium, only
immediately before use.

This activation on site is usually required because the components to be
10 brought together are chemically unstable in the mixed or impregnated state, or
they do not have the requisite shelf life in that state.

Summary of the Invention

It is the object of the invention to create a package with plural compartments
that on the one hand keeps the components cleanly separated until just before
15 the instant they are used, that makes joining them together (uniting them), or
mixing and then using them, clear and practicable from the standpoint of
manipulation, and that furthermore can be still produced economically.

According to the invention, this object is attained with the characteristics of
claim 1.

20 Brief Description of the Drawings

Several exemplary embodiments will now be described in conjunction with
drawings, which show:

Fig. 1: illustrations of the first exemplary embodiment of the package with
plural compartments;

25 Fig. 2: views of the second exemplary embodiment;

Fig. 3: views of a variant of the second exemplary embodiment;

Fig. 4: views of the third exemplary embodiment;

Fig. 5: views of the fourth exemplary embodiment;

Fig. 6: views of a first variant of the fourth exemplary embodiment; and
 Fig. 7: views of a second variant of the fourth exemplary embodiment.

Description of the Exemplary Embodiments

- The invention is based on a deep-drawn package, which in the first exemplary embodiment (Fig. 1) is equipped with at least two wells 1.1 and 1.2, in which the components to be brought together are located. The deep-drawn package is made from a thermoplastic deep-drawn part 1.3 and a sealed-on cover foil 1.4, which are equipped with a sealing medium that given a purposeful variation in the sealing parameters of temperature, pressure and sealing time makes a precisely defined sealing strength possible. A peelable seal is thus made in the region of a rib 1.5 between the wells 1.1 and 1.2, while around the wells 1.1 and 1.2 - or depending on the selected opening variant for removing the product - a solid seal 1.6 is made at least in part. This solid seal 1.6 can be either two-dimensional, or - as shown here - in linear form.
- The activation is accomplished in this first exemplary embodiment by manual pressure, for instance on the well 1.2. As a result, the defined peel-off seal in the region of the rib 1.5 is undone, and the components in the wells 1.1 and 1.2 run together. By exerting pressure in alternation on the wells 1.1 and 1.2, a mixing action can be achieved.
- To remove the activated product, a rated breaking point 1.7 is opened (by being cut off or kinked), and the end product can then be taken out through the conduit 1.8 connected to the well 1.1. The version in Fig. 1 is suitable for use with liquid or pastelike components, or when there is a need for powder or granulate or soluble solid bodies - such as a tablet - to be dissolved in a pastelike or liquid medium.

Until the on-site activation, the corresponding components are stored - as shown here - in the wells - in this case 1.1 and 1.2 - that are separated from one another by a peelable seal in the region of the rib 1.5.

- A second exemplary embodiment is shown in Fig. 2. Here the basic design is analogous to Fig. 1. The package is equipped with a well 2.1, which contains a

liquid medium. An absorbent inlay 2.9 (two-dimensional pattern) is located in the well 2.2. The wells 2.1 and 2.2 are separated from one another by a region of the rib 2.5 that is sealed in peelable fashion to the cover foil 2.4. The solid seal 2.6 is extended around the well 2.1 to approximately one-third the way
 5 along the well 2.2.

By pressure on the well 2.1, the peelable seal between the cover foil 2.4 and the rib 2.5 between wells 2.1 and 2.2 is opened, and the impregnating medium from well 2.1 runs into well 2.2 and wets the inlay 2.9. By pulling a loose peeling tab 2.10 open, the cover foil 2.4, peelably sealed to the deep-drawn
 10 part 2.3 on the periphery, can be pulled open as far as the beginning of the solid seal 2.6 (which can be either two-dimensional or linear - see Fig. 1), and the impregnated inlay 2.9 can be removed.

Fig. 3 shows a variant of the second exemplary embodiment of Fig. 2. In this case, as the application element to be impregnated, a swab with an absorbent
 15 tip 3.9 is placed in the well 3.2.

Fig. 4 shows a third exemplary embodiment using the on- site activatable containers with plural compartments for impregnating absorbent, compressed inlays that return to their original form - that is, their form before the compression - when they absorb an impregnating medium.

20 The impregnating medium is located in the well 4.1, and the absorbent compact 4.9 intended for application is located in the well 4.2. The well 4.2 is selected in size such that the compact 4.9 can expand fully when it absorbs the impregnating medium. By pressure on the well 4.1, the defined peelable seal in the region of the rib 4.5 is opened between the well 4.1 and the well 4.2.

25 The impregnating medium enters the well 4.2 and is absorbed by the compact 4.9, which expands accordingly.

By pulling the peel tab 4.10 open as far as the two- dimensional or linear solid seal 4.6, which extends only up to the well 4.2, the now impregnated and correspondingly expanded compact 4.9 can be removed.

Fig. 5 shows a fourth exemplary embodiment of the on- site-activatable container with plural compartments, in which the impregnating medium is located in well 5.1. The well 5.2 holds a compact 5.9, acting as an applicator, which expands accordingly when it absorbs the impregnating medium.

- 5 Between the wells 5.1 and 5.2, the deep-drawn and cover foil are sealed in a defined peelable way in the region of the rib 5.5. Above well 5.2, the cover foil 5.4 has a hole 5.11, which is slightly smaller than the compact 5.9. The hole 5.11 is closed by means of an adhesive label or a peelably sealed covering foil 5.12.
- 10 For the activation, pressure is exerted manually on the well 5.1, causing the impregnating medium to enter the compartment 5.2. The compact 5.9 absorbs the impregnating medium and seeks to expand to its original size. By pulling off the covering foil 5.12, the whole 5.11 above the compact 5.9 is uncovered. The compact 5.9 can now expand fully and swells like a mushroom out of the
- 15 hole 5.11, but because of the size difference between the compact and the hole it is still locked inside. The impregnating medium can be applied to the skin, for instance, by rubbing the surface of the compact on it.

Fig. 6 shows a first variant of the fourth exemplary embodiment of Fig. 5; the aperture 6.11 is located here in the deep-drawn part 6.3 on the bottom of the well 6.2. Once again, the closure is effected by means of a covering foil 6.12.

20

Fig. 7 shows a second variant of the fourth exemplary embodiment for use of the on-site-activatable deep-drawn package, in which the liquid impregnating medium 7.1 is accommodated in the well 7.1. A compact 7.9 is placed in the well 7.2; on absorbing liquid, this compact - as described already for the other

25 exemplary embodiments - undergoes a marked increase in volume.

The seal which is peelable in a defined way is located between the well 7.1 and 7.2 in the region of the rib 7.5. The solid seal 2.6 extends in two dimensions or in the form of a sealing line around the compartments 7.1 and 7.2. A spike 7.12 pointing inward is formed on in the deep-drawn part 7.3 and

30 serves to lock the compact 7.9 inside. The well 7.2 is designed to be longer by the amount to be expected as an increase in size for the compact 7.9. In the

region outside the compact 7.9, the deep-drawn part 7.3 is provided with a rated breaking point 7.13.

Upon activation by pressure on the well 7.1, the peelable seal in the region of the rib 7.5 opens; the impregnating medium enters the well 7.2 and is absorbed
5 by the compact 7.9. The compact 7.9 expands and fills what was until then the empty space on the face end of the well 7.2.

By being broken at the rated breaking point 7.13, the breaking tab 7.14 is folded out of the way, and an outer portion of the compact 7.9 is exposed.

The application of the medium is then done by stroking the skin, for instance,
10 with this exposed portion.

The compact cannot be removed unintentionally from the now-open compartment 7.2, since the spike 7.12 locks it inside. If removal is intended to be possible, then the spike is omitted.

Claims

1. A container with plural compartments, in particular a container with two compartments, in which the first compartment contains a first medium and a second compartment contains a second medium, having a deep-drawn part (1.3, ..., 7.3) that has two wells (1.1, ..., 7.1; 1.2, ..., 7.2), separated by means of a rib (1.5, ..., 7.5), which are surrounded by a common rim, and having a cover foil (1.4, ..., 7.4), which is joined to the rib at least in part, in such a way that when pressure is applied to one of the compartments, the communication between the two compartments is established by detachment of the cover foil (1.4, ..., 7.4) from the rib (1.5, ..., 7.5), and the rim withstands this pressure, characterized in that the cover foil (1.4, ..., 7.4) and the thermoplastic deep-drawn part (1.3, ..., 7.3) have a sealing medium, which by a locally defined adaptation of the sealing parameters of temperature, pressure, and sealing time to the sealing area generates a first sealing strength on the rib (1.5, ..., 7.5) that corresponds to that of a peelable bond between the cover foil (1.4, ..., 7.4) and the deep-drawn part (1.3, ..., 7.3) and on the rim generates a second sealing strength, which corresponds to that of a peelable bond between the cover foil (1.4, ..., 7.4) and the deep-drawn part (1.3, ..., 7.3).
2. The container with plural compartments of claims 1, characterized in that the first sealing strength is graduated over the width of the rib in such a way that the through cross section between the rib and the cover foil increases with increasing pressure.
3. The container with plural compartments of claim 1, characterized in that the well in which the two media have come into contact (the contact well) has an opening region.
4. The container with plural compartments of claim 3, characterized in that the well (1.1) has a rated breaking point (1.7), which uncovers a conduit (1.8) as the opening region.

5. The container with plural compartments of claim 3, characterized in that the sealing strength in the region remote from the rib (2.5) is selected such that the cover foil (2.4) is peelable and at least partly uncovers the contact well (2.2; 3.2; 4.2).

5 6. The container with plural compartments of claim 3, characterized in that the contact well has an opening which is closed with a peelable covering foil (5.12, 6.12).

7. The container with plural compartments of claim 6, characterized in that the opening is an aperture (6.11) in the contact well (6.2).

10 8. The container with plural compartments of claim 6, characterized in that the opening is a hole (5.11) in the cover foil (5.4).

9. The container with plural compartments of claim 1, characterized in that the first compartment contains a liquid and the second compartment contains an absorbent inlay (.9).

15 10. The container with plural compartments of claim 7 or 8 and 9, characterized in that the opening is dimensioned such that the inlay is not removable.

11. The container with plural compartments of claims 6 and 9, characterized in that the inlay is a compact (5.9, 6.9) and swells partway out of the opening
20 after the liquid is added.

12. The container with plural compartments of claim 10, characterized in that the contact well (7.2) has a spike (7.12), which fixes the inlay (7.9) in its compartment.

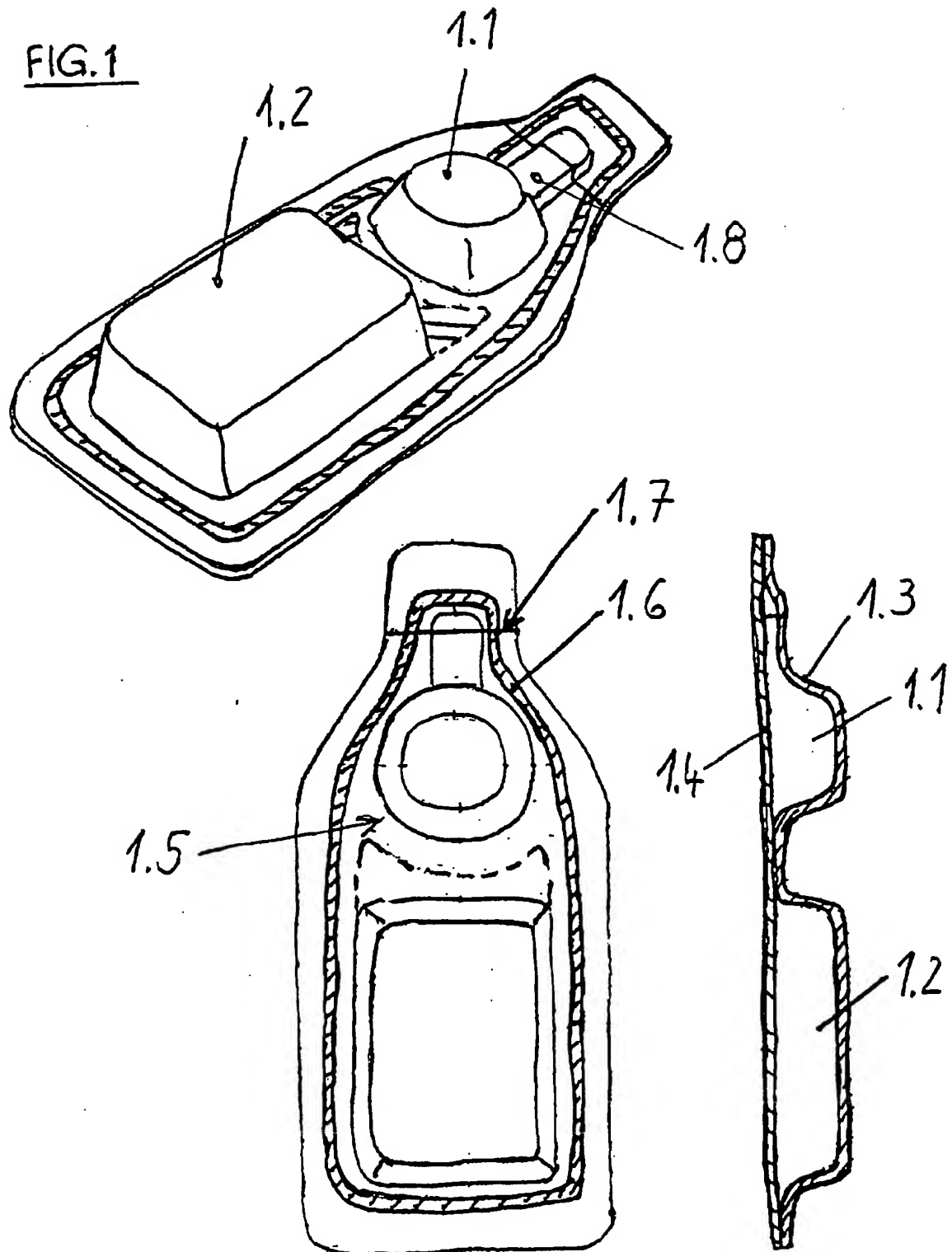
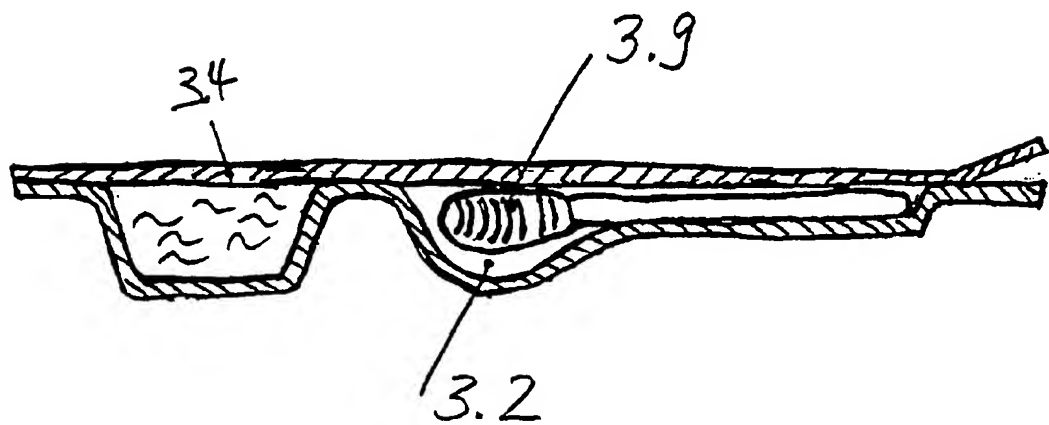
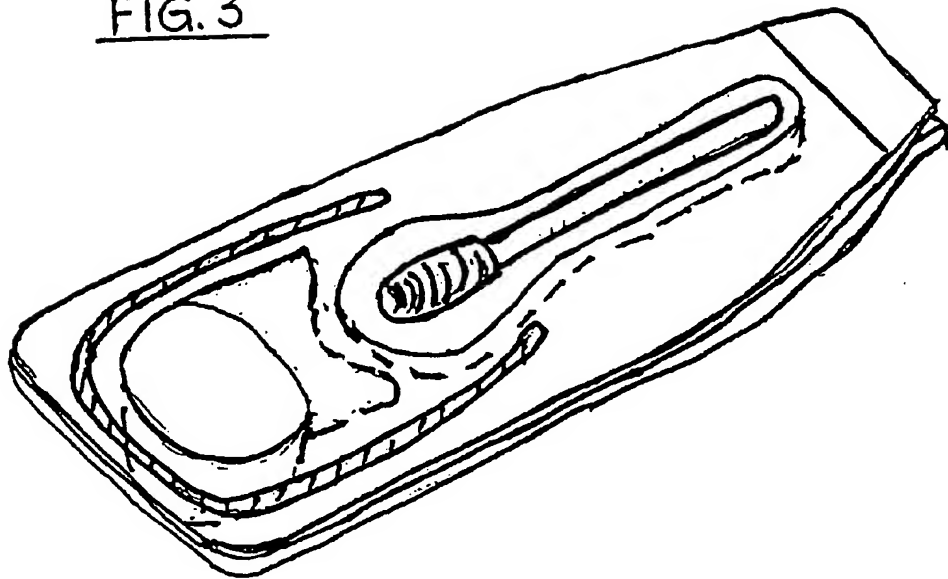
FIG. 1

FIG. 3

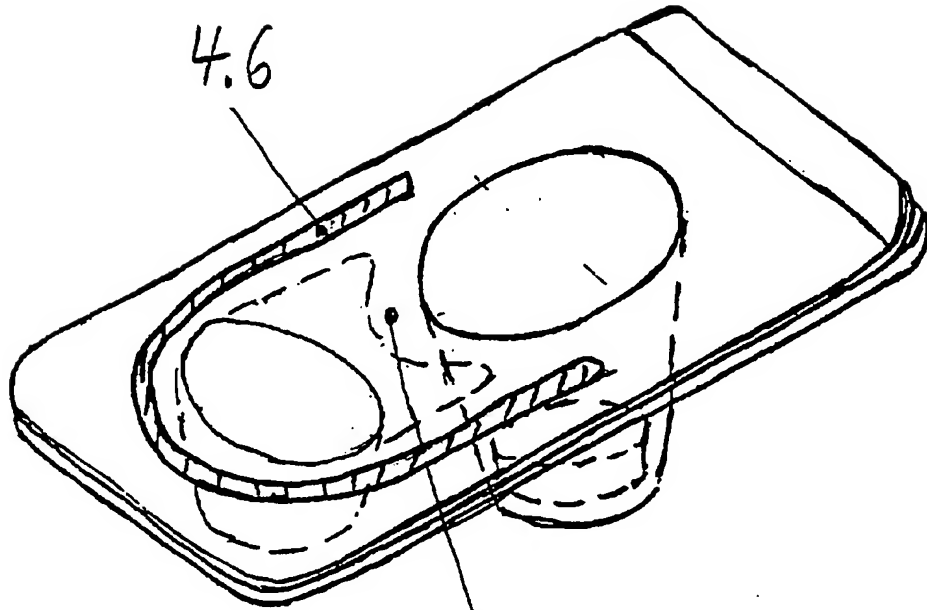
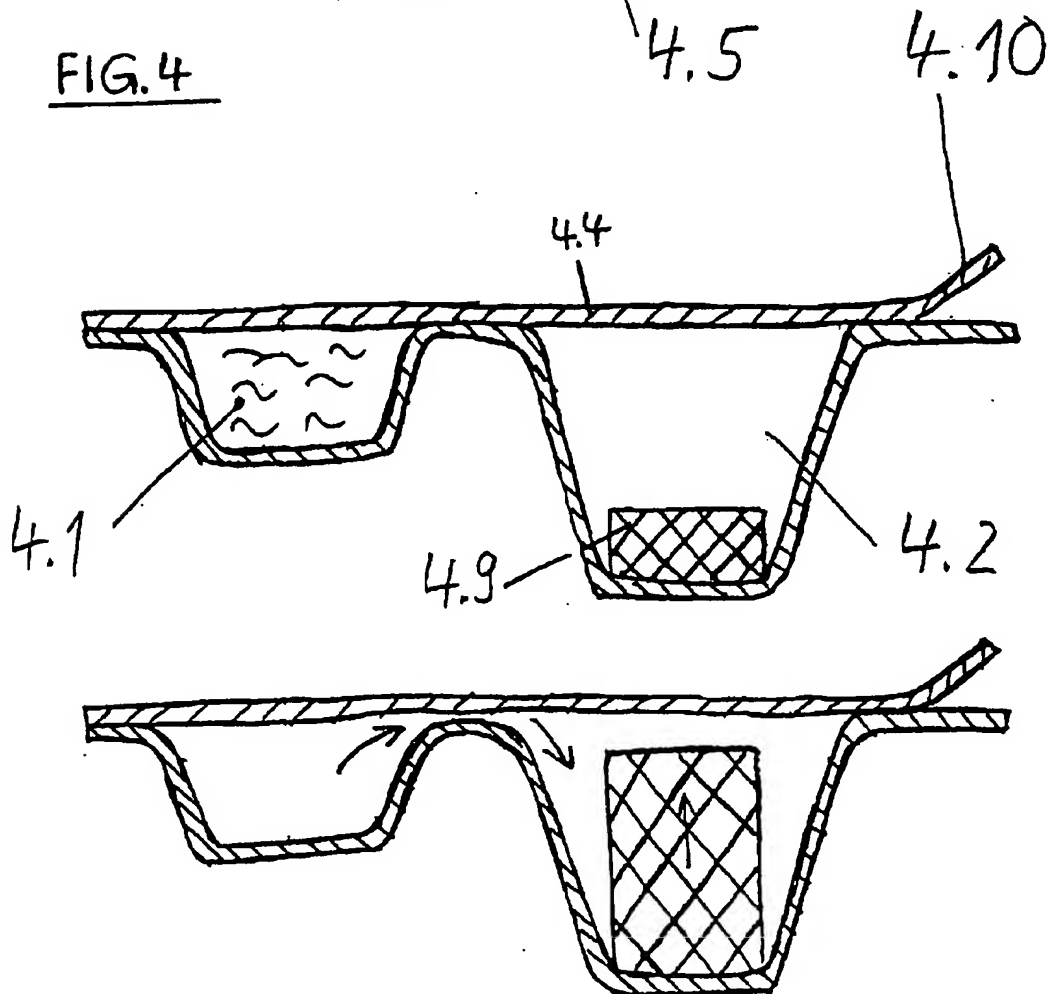
FIG. 4

FIG. 5

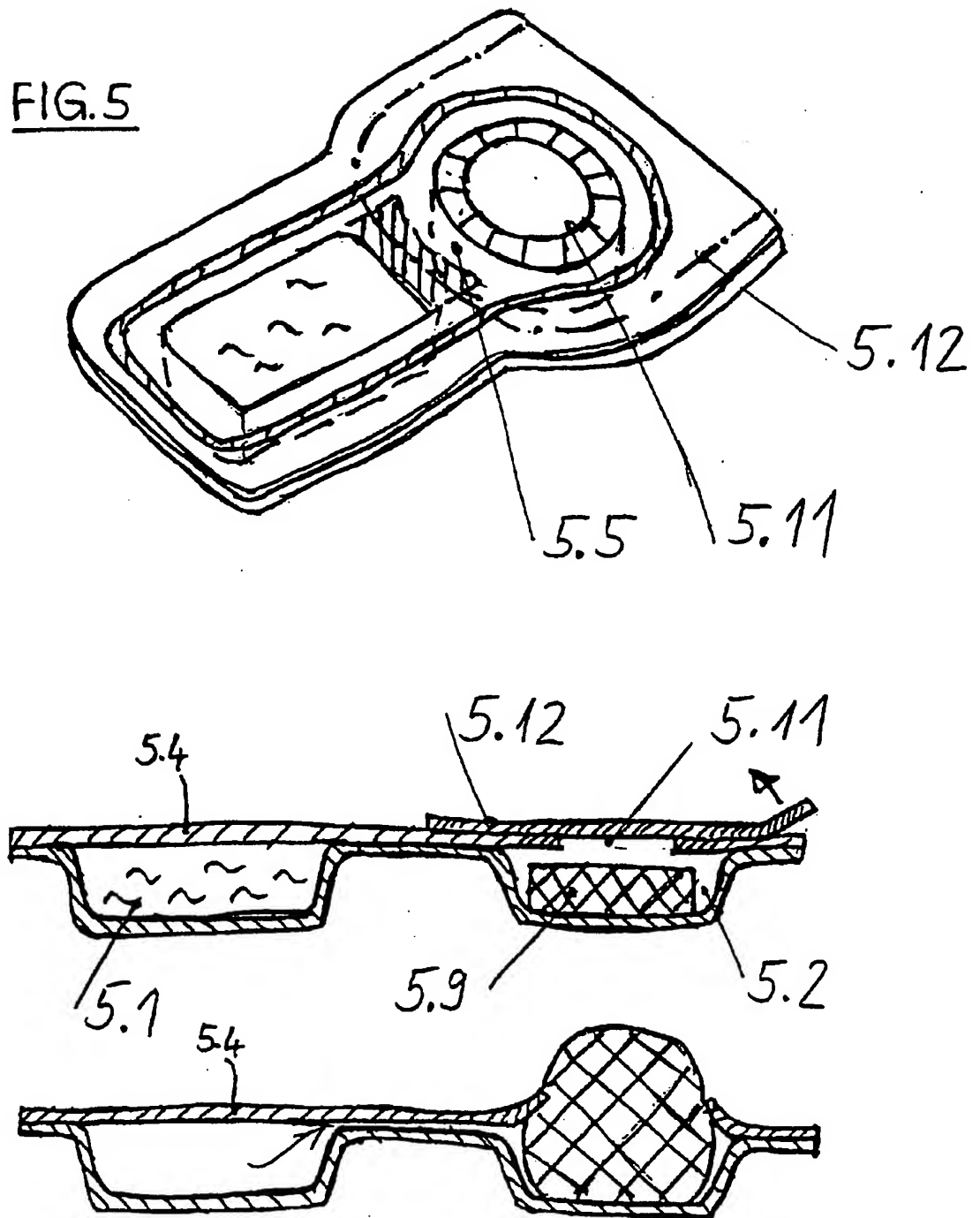
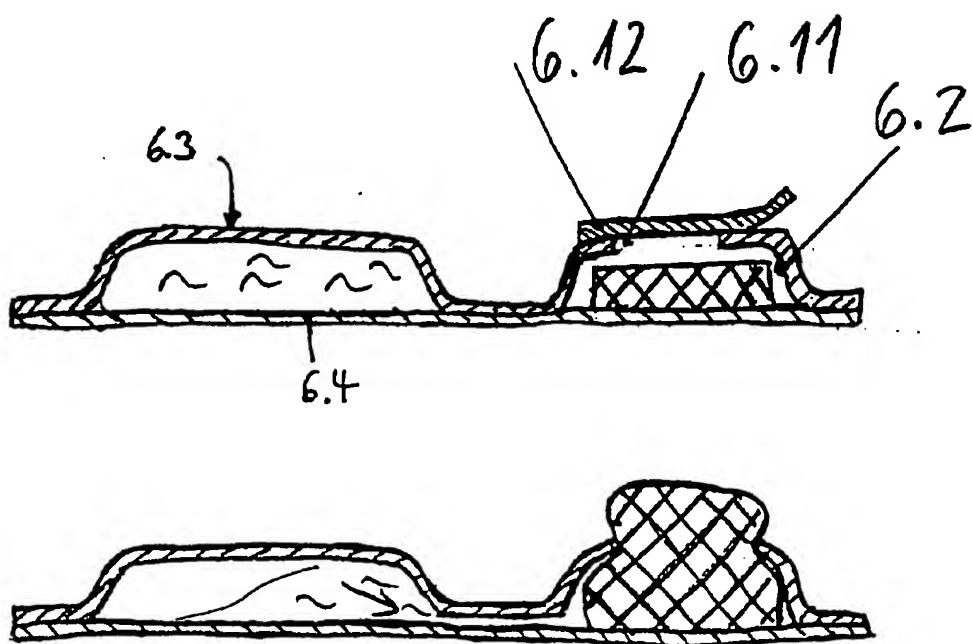
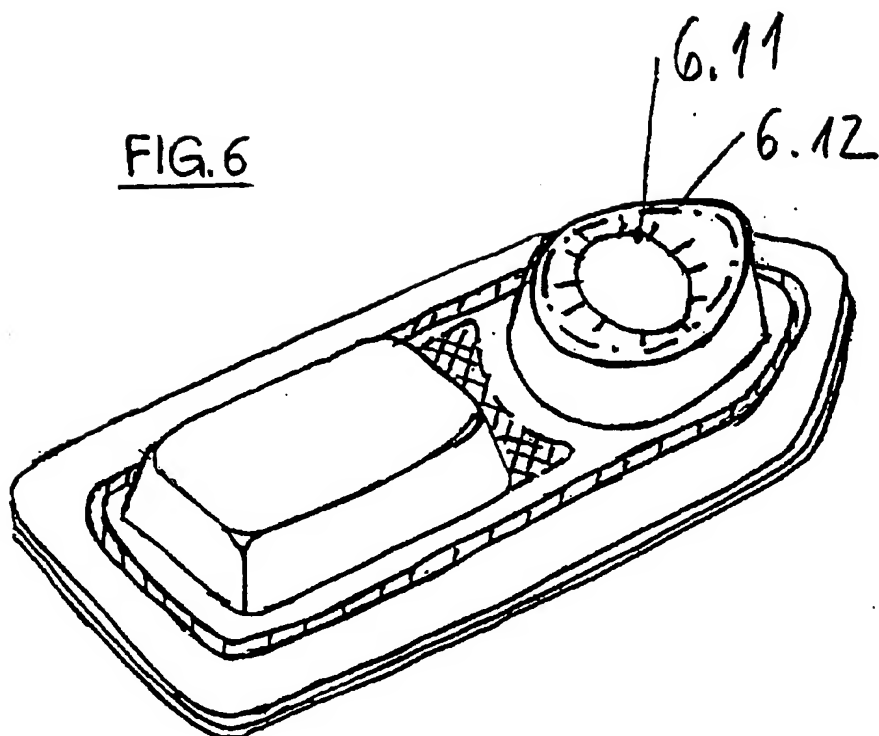


FIG. 6



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FIG. 7

